

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-16. (Cancelled).

17. (Currently Amended) A method for determining whether a wireless station is located within a geographical zone that is of substantially any shape, the method comprising:

establishing a hierarchical data structure for representing an area of interest including the geographical zone, the hierarchical data structure including a first level where the area of interest is represented by cells and a second level where the area of interest is represented by ~~subcells~~, subcells, said subcells of said second level corresponding to smaller geographical areas than said cells of said first level;

establishing a geographical zone definition for said geographical zone by reference to said hierarchical data structure wherein said geographical zone definition includes information identifying at least one identified cell of said first level and at least one identified subcell of said second level such that said geographical zone is collectively defined by said identified cells and subcells;

receiving a location associated with a wireless station; and

determining whether or not the location associated with the wireless station is within the geographical zone by using said location associated with the wireless station and said geographical zone definition including said identified cells and subcells, wherein said step of determining is facilitated by use of both said identified cells and said identified subcells in said geographical cell definition.

18. (Cancelled).

19. (Previously Presented) A method as set forth in Claim 17, wherein said step of establishing a hierarchical data structure comprises establishing a quadtree data structure.

20. (Previously Presented) A method for constructing a representation of an area that includes an area of interest and is suitable for use in high-speed wireless telecommunication application that requires a determination of whether a location associated with a wireless station is within the area of interest, the method comprising:

receiving a map of an area of interest in a telecommunication application;
vectorizing the boundaries of the area of interest to define a polygon having a plurality of edges that enclose an area:

first establishing a hierarchical data structure for representing said area of interest, the hierarchical data structure including a first level where said area of interest is represented by cells and second level where said area of interest is represented by subcells, said subcells of said second level corresponding to smaller geographical areas than said cells of said first level;

second establishing, for at least one cell of said first level that identifies said polygon and for at least one subcell of said second level that identifies said polygon, indicators that indicate that the associated cell and subcell identify said polygon;

wherein said indicators can subsequently be used to determine if the location associated with a wireless station is within said polygon.

21. (Previously Presented) A method, as claimed in Claim 20, wherein said step of second establishing includes:

determining if all subcells of the second level that correspond to a given cell of the first level ("corresponding subcells") have indicators;

establishing, if all corresponding subcells have indicators, an indicator for the given cell; and

removing, if all corresponding subcells have indicators, the corresponding subcells from the hierarchical data structure.

22. (Previously Presented) An apparatus for use in connection with a wireless network for determining if a wireless station is within an area of interest, said apparatus comprising:

memory for storing a definition of said area of interest in terms of a hierarchical data structure, the hierarchical data structure including first level where the area of interest is represented by cells and a second level where the area of interest is represented by subcells, said subcells of said second level corresponding to smaller geographical areas than the cells of said first level, said definition including information identifying at least one identified cell of said first level and at least one identified subcell of said second level, such that said area of interest is collectively defined by said identified cells and subcells; and

a processor for receiving a location associated with a wireless station and determining whether or not the location associated with the wireless station is within the area of interest by using the location associated with the wireless station and the stored definition including said identified cells and subcells.

23. (Previously Presented) An apparatus as set forth in Claim 22, wherein said definition is stored in terms of a quadtree data structure.

24. (New) A method for determining whether a wireless station is located within a geographical zone that is of substantially any shape, the method comprising:

establishing a hierarchical data structure for representing an area of interest including the geographical zone, the hierarchical data structure including a first level where the area of interest is represented by cells and a second level where the area of interest is represented by subcells, said subcells of said second level corresponding to smaller geographical areas than said cells of said first level;

establishing a geographical zone definition for said geographical zone by reference to said hierarchical data structure wherein said geographical zone definition includes information identifying at least one identified cell of said first level and at least one identified subcell of said second level such that said geographical zone is collectively defined by said identified cells and subcells;

receiving a location associated with a wireless station; and

determining whether or not the location associated with the wireless station is within the geographical zone by using said location associated with the wireless station and said

geographical zone definition including said identified cells and subcells, wherein said step of determining is facilitated by use of both said identified cells and said identified subcells in said geographical cell definition,

wherein said step of establishing said geographical zone definition comprises:

identifying a set of subcells corresponding to said geographical zone and
storing first zone information relative to said set of subcells;

identifying, from said set of subcells, a subset of said subcells
corresponding to a particular cell of said first level of said hierarchical data structure;
and

storing second zone information generally corresponding to said first zone
information, but wherein information regarding said subset of subcells is replaced with
information regarding said particular cell of said first level of said hierarchical data structure,
thereby facilitating storage and processing of said geographical zone definition.

25. (New) A method comprising:

providing a hierarchical data structure representative of a geographic area of
interest, wherein the hierarchical data structure comprises a cell in a first level and subcells to the
cell in a second level, relative to the first level, and the subcells in the second level represent
corresponding, smaller geographic areas of the geographic area represented by the cell in the first
level;

receiving a location associated with a wireless station;

using the location associated with the wireless station to find a cell in the first or
second level in the hierarchical data structure that is associated with the location of the wireless
station; and

providing an indication that the wireless station is in an area of interest if the cell
found has a flag associated with the cell.

26. (New) The method of claim 26 wherein providing a hierarchical data
structure comprises:

establishing a first level of a hierarchical data structure to represent a geographic

area of interest, wherein the first level comprises a first-level cell;

establishing a second level of the hierarchical data structure comprising at least four second-level subcells to the first level, representing first subregions of the geographic region of interest; and

establishing a third level of the hierarchical data structure comprising at least four third-level subcells to each of the four second-level subcells, representing second subregions of the first subregions of the geographic region of interest.

27. (New) A method comprising:

receiving a map of an area of interest in a telecommunication application;

forming boundaries of the area of interest to define a polygon having a plurality of edges that enclose an area:

establishing a hierarchical data structure for representing said area of interest, the hierarchical data structure including a first level where said area of interest is represented by cells and a second level where said area of interest is represented by subcells, said subcells of said second level corresponding to smaller geographical areas than said cells of said first level; and

establishing, for at least one cell of said first level that identifies said polygon and for at least one subcell of said second level that identifies said polygon, an indicator that indicates that the associated cell and subcell identify said polygon,

wherein said indicator can be used to determine if the location associated with a wireless station is within said polygon.

28. (New) The method of claim 20 wherein said step of establishing an indicator comprises:

determining if each subcell of the second level that correspond to a given cell of the first level ("corresponding subcells") has an indicator;

if each corresponding subcell has an indicator, establishing an indicator for the given cell; and

if each corresponding subcell has an indicator, removing the corresponding subcell from the hierarchical data structure.